Applicant: Maurizio Valle
Application No.: 10/656,419

IN THE CLAIMS

1. (currently amended) A front bicycle derailleur comprising:

a supporting body fastened to the bicycle frame,

a fork unit for derailing the bicycle chain,

means for connecting the fork unit to the supporting body, including at least one arm, ~~which~~ having ends that pivot on the supporting body and the fork unit,

an actuating arm, consisting of an extension of said ~~pivoting~~ one arm; and,

~~and~~ an electrical motor ~~depending~~ that depends from the supporting body and is operatively connected to said actuating arm through a geared transmission comprising a worm gear connected to the electrical motor ~~and~~, the worm gear driving and directly engaging a sector gear connected to said actuating arm.

2. (original) The front derailleur of claim 1 wherein said sector gear and said actuating arm are a single unit.

3. (original) The front derailleur of claim 1 wherein said sector gear, said actuating arm and said articulated arm are a single unit.

4. (cancelled)

5. (currently amended) A front bicycle derailleur comprising:

a supporting body fastened to the bicycle frame,

a fork unit for derailing the bicycle chain,

means for connecting the fork unit to the supporting body, including at least one arm having ends that pivot on the supporting body and the fork unit,

an actuating arm comprising an extension of said one arm, and

an electrical motor depending from the supporting body and operatively connected to said actuating arm through a geared transmission comprising a worm gear connected to the electrical motor and a sector gear connected to said actuating arm,

~~The front derailleur of claim 1,~~ wherein said geared transmission ~~consists of~~ comprises a bevel pair comprising a tapered pinion connected to the electrical motor shaft and a tapered sector gear which controls the actuating arm.

6. (original) The front derailleur of claim 5 wherein said tapered gear is connected to said actuating arm.

7. (original) The front derailleur of claim 6 wherein said tapered gear and said actuating arm are a single unit.

8. (original) The front derailleur of claim 7 wherein said sector gear, said actuating arm and said articulated arm are a single unit.

9. (original) The front derailleur of claim 6, wherein said tapered gear is connected to and turns on a pinion engaged with a sector gear connected to the actuating arm.

10. (currently amended) A bicycle derailleur for use on a bicycle having a frame and a bicycle transmission chain carried by the frame, operatively associated with the derailleur, the derailleur comprising:

a supporting body for attachment to the bicycle frame;

a fork unit for derailing the transmission chain;

a first articulated arm pivotably attached to the supporting body and the fork unit and an actuating arm extending therefrom;

a second articulated arm having a first end pivotably attached to the fork unit and a second end pivotably attached to the supporting body; and,

an electrical motor that depends from the supporting body and controls the motion of the actuating arm by means of a transmission having a first gear connected to the electrical motor and a cooperating second gear in direct engagement with the first gear and attached to the actuating arm.

11. (original) The derailleur of claim 10, wherein the first gear is a worm gear and the second gear is an actuating sector gear.

12. (cancelled)

13. (original) A bicycle derailleur for use on a bicycle having a frame and a bicycle transmission chain carried by the frame, operatively associated with the derailleur, the derailleur comprising:

a supporting body for attachment to the bicycle frame;

a fork unit for derailing the transmission chain;

a first articulated arm pivotably attached to the supporting body and the fork unit and an actuating arm extending therefrom;

a second articulated arm having a first end pivotably attached to the fork unit and a second end pivotably attached to the supporting body; and,

a motor that depends from the supporting body and controls the motion of the actuating arm by means of a first gear connected to the electrical motor and a second externally toothed gear rigidly attached to the actuating arm.

14. (cancelled)

15. (original) A bicycle derailleur for use on a bicycle having a frame and a bicycle transmission chain operatively associated with the derailleur, the derailleur comprising:

a supporting body for attachment to a bicycle frame;

a fork unit for derailing the transmission chain;

a first articulated arm pivotably attached to the supporting body and the fork unit and an actuating arm extending therefrom;

a second articulated arm having a first end pivotably attached to the fork unit and a second end pivotably attached to the supporting body;

an electrical motor that drives the actuating arm by means of a geared transmission comprising a first gear connected to the electrical motor and a second gear connected to the actuating arm such that the second gear has an axis of rotation that is substantially perpendicular to the axis of rotation of the first gear.

16. (original) A bicycle derailleur for use on a bicycle having a frame and a bicycle transmission chain operatively associated with the derailleur, the derailleur comprising:

a supporting body for attachment to a bicycle frame;

a fork unit for derailing the transmission chain;

a first articulated arm pivotably attached to the supporting body and the fork unit and an actuating arm extending therefrom;

a second articulated arm having a first end pivotably attached to the fork unit and a second end pivotably attached to the supporting body;

an electrical motor that drives the actuating arm through a geared transmission comprising a first gear connected to the electrical motor and a second gear connected to the actuating arm such that the second gear has an axis of rotation that is substantially perpendicular to the axis of rotation of the first gear.

17. (new) The bicycle derailleur of claim 10 further comprising:

a roller bearing engaged with the supporting body and also coaxially rotatably engaged with an end of the first gear opposite an end of the first gear connected to the motor, wherein the rotatable engagement allows for axial rotation of the first gear within the roller bearing.

18. (new) The bicycle derailleur of claim 13 further comprising:

a roller bearing engaged with the supporting body and also coaxially rotatably engaged with an end of the first gear opposite an end of the first gear connected to the motor, wherein the rotatable engagement allows for axial rotation of the first gear within the roller bearing.

19. (new) The bicycle derailleur of claim 15 further comprising:

a roller bearing engaged with the supporting body and also coaxially rotatably engaged with an end of the first gear opposite an end of the first gear connected to the motor, wherein the rotatable engagement allows for axial rotation of the first gear within the roller bearing.

20. (new) A front bicycle derailleur comprising:

a supporting body fastened to the bicycle frame,

a fork unit for derailing the bicycle chain,

means for connecting the fork unit to the supporting body, including at least one arm, having ends that pivot on the supporting body and the fork unit,

an actuating arm comprising an extension of said one arm; and

an electrical motor that depends from the supporting body and includes a drive gear that is in direct engagement with a driven gear connected to said actuating arm.

21. (new) A front bicycle derailleur comprising:

a supporting body configured for attachment to a bicycle frame;

a pivot arm attached to said support body and including an actuation arm;

a fork unit for derailing a bicycle chain attached at an end of said actuation; and

an electrical motor that depends from the supporting body and includes a drive gear which directly engages a driven gear associated directly with said actuating arm.